JUSTIFICATION AND APPROVAL

Justification for Other Than Full and Open Competition (FAR 6.3)

1. Contracting Agency and Activity. The Department of the Interior, United States Geological Survey (USGS), Groundwater Resources Program, Office of Groundwater, plans to contract by means other than full and open competition. This document sets forth the justification and approval for use of one of the exceptions to full and open competition allowed under the Competition in Contraction Act (CICA) of 1984.

2. Nature of Action Being Approved. Action is a new contract with Dr. Mark Bakker of Delft University of Technology, The Netherlands.

3. Description of Supplies or Services. The Office of Groundwater requires assistance in implementing a Salt Water Intrusion (SWI) Package for MODFLOW2005. The package is required for ongoing and planned saltwater intrusion investigations in coastal aquifers.

4. Estimated Dollar Value.

5. Statutory Authority. The proposed action may be awarded without full and open competition under 41 U.S.C. 253(c) (1) as implemented in FAR 6.302-1.

6. Rationale Supporting Use of Citation in No. 5. Dr. Bakker is an expert in the field of saltwater intrusion and has been innovative in developing a method to estimate the location of the saltwater-freshwater interface based on the Dupuit approximation. The SWI package, currently implemented in MODFLOW2000, has been developed by Dr. Bakker of Delft University and he has unique skills related to the mathematics and development of the package. The U.S. Geological Survey intends to use the SWI package for some of the regional numerical models being developed as part of the Groundwater Resources Program Water Availability Studies. These projects need an updated version of the package in MODFLOW2005 for it to be used with the most advanced numerical modeling tools available in the USGS. Other necessary SWI upgrades that will be performed by Dr. Bakker include implementation of: (1) multiple numerical solvers to approximate the location of the fresh water-saltwater density iso-surfaces, (2) adaptive time stepping, (3) capabilities to move density iso-surfaces through quasi-3D confining layers, and (4) improved water budget calculations. Dr. Bakker is the sole developer of the SWI package, which is released for free into the public domain. As the sole developer and innovator of the mathematical method used by SWI, he is the only entity that can update the package to MODFLOW2005.

7. Other Information. None

8. The Efforts to Identify Additional Sources Including the Market Research Conducted.

A review of relevant groundwater literature conclusively indicated that there are no other saltwater intrusion packages for MODFLOW2005 that could be used for the coastal research projects presently underway by the U.S. Geological Survey. The U.S. Geological Survey uses MODFLOW extensively for groundwater investigations, and adding the SWI package will extend U.S. Geological Survey modeling capabilities into coastal areas.

9. Future Plans to Permit Competition.

Development of MODFLOW2005 packages is a highly specialized service. Depending on the package purpose, there is often only a single scientist or research unit capable of developing the specific package. For those packages that could be developed by more than one research unit or scientist, the U.S. Geological Survey will seek competition.

10. Recommendation and Certification from Program Office

Based on the above, I recommend this acquisition be conducted on the basis of other than full and open competition. I certify that technical data which form a basis for this justification that are the responsibility of technical or requirements personnel are complete and accurate.

11. Certifications and Approval from the Contracting Officer:

a. The Contracting Officer will determine the cost to be fair and reasonable as the cost will be compared to past orders placed of a similar nature or complete cost analysis of the pricing.

b. This justification is accurate and complete to the best of my knowledge and belief.

12. Approvals